

IN THE COURT OF APPEAL OF NEW ZEALAND

I TE KŌTI PĪRA O AOTEAROA

**CA567/2017
[2019] NZCA 373**

BETWEEN	XIAOMING HE Appellant
AND	EARTHQUAKE COMMISSION First Respondent
AND	CERTAIN SYNDICATES OF LLOYD'S OF LONDON SEVERALLY SUBSCRIBED TO COVERHOLDER CONTRACT B0429CNG90466 AND CERTAIN SYNDICATES OF LLOYD'S OF LONDON SEVERALLY SUBSCRIBED TO COVERHOLDER CONTRACT B0429CNG110466 Second Respondents

Hearing: 30 July 2019

Court: Brown, Collins and Goddard JJ

Counsel: P A Cowey and A J Summerlee for Appellant
M R Crotty and N L Walker for First Respondent
R M Flinn and A R Moore for Second Respondents

Judgment: 20 August 2019 at 10.00 am

JUDGMENT OF THE COURT

A The appeal is dismissed.

B The appellant must pay one set of costs to the first respondent and one set of costs to the second respondents, in each case for a standard appeal on a band A basis together with usual disbursements. We certify for second counsel.

REASONS OF THE COURT

(Given by Goddard J)

Introduction

[1] The appellant, Mr He, owns a property at 377 Selwyn Street in Christchurch. The principal building on the property (the house) is a house with a shop attached to it. There are also two freestanding garages. At the time of the Canterbury earthquakes in 2010 and 2011 the house was covered for natural disaster damage under the Earthquake Commission Act 1993 (EQC Act). The property was also insured with the second respondents (whom we refer to collectively as OMPL)¹ in respect of certain earthquake damage not covered by the Earthquake Commission (EQC), on the basis set out in the relevant insurance policies.

[2] The house suffered damage caused by the Canterbury earthquakes. Mr He made claims to EQC in respect of that damage. EQC paid approximately \$16,000 for repairs to the house. Mr He considered that EQC's liability under the EQC Act substantially exceeded this sum. Mr He also made claims to OMPL in respect of damage to the property, which OMPL did not accept. Mr He brought proceedings against EQC and OMPL in the High Court. The claim was largely unsuccessful, apart from a minor claim against EQC for repairs to plaster damage on a section of the perimeter foundation of the house.²

[3] In the High Court Mr He advanced a number of claims in respect of damage to the property which he said had been caused by the September 2010, February 2011 and June 2011 Canterbury earthquakes. Mr He's appeal to this Court is confined to two of the issues that were determined by the High Court:

- (a) The High Court dismissed Mr He's claims in relation to damage caused by the February 2011 earthquake, other than the minor damage to the perimeter foundation mentioned above.³ The High Court held that Mr He had not established that there was any other damage to the house

¹ Offshore Market Placements Ltd (OMPL) is a company that acts as agent for the underwriters of the relevant insurance policies.

² *He v Earthquake Commission* [2017] NZHC 2136 [High Court Decision].

³ At [213].

caused by that earthquake. Mr He challenges this factual finding. He says that the February 2011 earthquake caused material changes in the house's floor levels, in particular in the north-east corner. He claims that this damage should be remedied by replacement of the house's foundations.

- (b) The two chimneys in the house were damaged in the September 2010 earthquake. EQC met its obligations to Mr He in relation to one of the chimneys by paying for a heat pump. EQC paid the sum of \$5,089 to Mr He to meet the cost of rebuilding the second chimney. The High Court held that this payment satisfied EQC's obligations in respect of damage to that chimney.⁴ Mr He says that EQC has not met its obligations under the EQC Act in relation to the second chimney, and that he is entitled to be paid the cost of an engineer's inspection of the remaining part of the chimney, and if necessary, deconstruction, design and replacement of that chimney.

Background

[4] The background to Mr He's claims is set out in detail in the High Court Decision. The limited scope of this appeal means that we need not rehearse all of the matters canvassed in the High Court. However, because the central issue in this appeal is whether the significant dislevelment of the floor of the house was caused or contributed to by the Canterbury earthquakes, it is necessary to describe the property, and in particular the house, in some detail. We gratefully adopt Dunningham J's description of the property.

[7] The history of the construction of the house is relevant to the issues in this proceeding. There have been alterations to the house over time, and there are differences over the extent to which the property's construction has contributed to pre-existing settlement, or its performance in the earthquakes. There are also live issues as to whether the observable damage to the house was the result of the earthquakes or the lack of maintenance over many years.

[8] It is not known when the original part of the dwelling was constructed. However, the general view of the builders who inspected it was that it was at least 80 years ago. The original dwelling is sited close to the street frontages

⁴ At [108].

on the south and east of the property and comprises a single storey timber-framed and weatherboard-clad house with a corrugated iron roof. At the time of construction there was also a separate outhouse to the south west of the dwelling. Early on, the front of the house was modified to create the shop entrance. In the mid 1950s the house was extended to the rear and the extension incorporated the outhouse within the dwelling. This extension created a large room on the north side, which was subsequently fitted with an external sliding door, and which is now used as a storeroom. The addition also incorporates a small kitchenette, laundry and bathroom.

[9] Two garages were constructed to the rear of the section. Historic aerial photos show that the larger garage, nearer to the road on the south boundary, was built in the early 1950s (the south garage) and the smaller garage to the north of it, was built in the 1980s (the north garage). A concrete hardstand area was laid between the garages and the rear of the house, around the time the first garage was built.

[10] Although it was not possible for engineers to inspect the underfloor area of the house because of the lack of ground clearance, photographs were able to be taken of some areas underneath the house using a remote-controlled camera unit. In addition, the parties' structural engineers undertook some excavation around the perimeter of the house to determine what foundations exist.

[11] These investigations show that the piles under the original house comprise quarry stone foundations going down approximately 250 millimetres into the ground, some with wooden packers inserted on top of them. The piles are relatively small and this affects their bearing capacity. The subfloor bearers are not attached to these piles and some of the bearers are resting on the ground. There is also an unreinforced concrete strip foundation along the front of the shop on the eastern side and along part of the southern exterior walls.

[12] The foundations which were located under the newer section of the house, particularly in the northwest corner, are inadequate. Under the toilet and laundry area on the southwest side they comprise a combination of stones and bricks. On the northern side of the addition there are no stone piles but, over the course of their investigations, engineers located two small rotting wooden piles on the north west corner of the property. In this corner the timber bearer beneath the wall is embedded in the ground and the wall is bearing on the ground by way of the timber bearer rather than on piles. Some of the bearers under the bathroom, toilet and laundry are also sitting directly on the ground and the engineers have had difficulty ascertaining what foundation system was there, if any. The southwest corner also has an external bearer sitting on the ground.

[13] Underneath where the older part of the house meets the addition, there are rudimentary packers of bricks and small pieces of timber under the floor joists near the back wall of the original dwelling. There is no evidence that the foundations beneath what was the exterior wall of the original dwelling were enhanced to support the extra load on them resulting from the new addition.

[14] Early in the hearing a site visit was undertaken. It confirmed the photographic evidence which showed that the house is in extremely poor

condition. Inside, the floor is undulating and there has been little maintenance to the interior for many years. Indeed the floorboards in the bathroom have rotted right through. On the exterior, the weatherboards are rotting and peeling, the gutters are slumping and rusting, and the concrete perimeter rim foundation has visible cracks in it at regular intervals. This created significant difficulties in establishing what, if any, damage was earthquake related.

[5] Mr He filed proceedings in the High Court claiming approximately \$325,000 from EQC and approximately \$445,000 from OMPL. The High Court Decision sets out the prolonged and unsatisfactory course of those proceedings. Mr He's case evolved significantly before trial, and that evolution continued at trial. The Judge summarised the essence of the case presented at trial as follows (a summary Mr He accepted as accurate in his submissions to this Court):⁵

- (a) Mr He says the dwelling suffered damage after the February 2011 earthquake, and the garages and hardstand area suffered damage in the June 2011 earthquake;
- (b) [Mr He's] structural engineer, Mr Gilmore, says the observed damage to the property is consistent with earthquake damage; and
- (c) relying on the geotechnical analysis of Mr Thompson and his own structural engineering expertise, Mr Gilmore says the observed damage was more likely to be earthquake damage given the physical properties of the structures, the force of the earthquake, and the bearing capacity of the relevant soils.

Legal principles

[6] The relevant legal principles were not in dispute before us.

Burden of proof

[7] Mr He bears the burden of making out his claim at trial and on appeal. In particular, the burden is on Mr He to establish that the house suffered damage caused by the Canterbury earthquakes. It is not sufficient for him to point to the (undisputed) dislevelment of the house's floor, or to establish that it is possible that this might have been caused or contributed to by the earthquakes. He needs to show on the balance of probabilities that differential settlement of the house was caused or materially contributed to by the earthquakes.⁶

⁵ At [52].

⁶ At [59].

Damage

[8] The Judge held, and counsel for Mr He accepted before us, that in order for Mr He to show that there was damage to the house for the purposes of the EQC Act or for the purposes of the relevant insurance policies, Mr He needs to show that the Canterbury earthquakes resulted in a physical change to the house that was more than negligible, and that this physical change impaired the value or usefulness of the house.⁷ Pre-existing damage and deterioration are not barriers to a claim for earthquake damage. But where there is already extensive damage, or where a building is already in a dilapidated state, minor additional physical effects caused by an earthquake may make no material difference to the value or usefulness of the house, with the result that there is no damage to which the Act or the insurance policies would respond.

Approach on appeal

[9] Mr He, as the appellant, bears the onus of satisfying this Court that we should differ from the decision of the High Court. His appeal can succeed only if we are satisfied that the Judge's conclusion on the merits was wrong. In forming our own view on the merits of the issues raised on appeal, we take into account the advantages the trial judge had in assessing the evidence.⁸ In *Sena v Police* the Supreme Court identified two main reasons for the "customary caution" exercised by an appellate court, in particular where there is a challenge to credibility findings based on contested oral evidence:⁹

[39] The first is that a slow-paced trial, at which the evidence emerges gradually, provides a good opportunity for evaluating the strengths and weaknesses of a case. In assessing the plausibility of what is said by the witnesses, the judge has the advantage of being also able to form a view as to what sort of people they are. This is an appreciable consideration despite the now well-recognised difficulties with demeanour-based credibility assessments.

[40] The second consideration, in effect the other side of the coin to the first, is that appellate judges dealing with a case on the basis of a written record of what happened at trial and the submissions of counsel are unlikely

⁷ At [67]. See also *Kraal v Earthquake Commission* [2015] NZCA 13, [2015] 2 NZLR 589 at [37]; *C & S Kelly Properties Ltd v Earthquake Commission* [2015] NZHC 1690 at [175]; and *Ranicar v Frigmobile Pty Ltd* [1983] Tas R 113 (SC) at 116.

⁸ *Austin, Nichols & Co Inc v Stichting Lodestar* [2007] NZSC 103, [2008] 2 NZLR 141.

⁹ *Sena v Police* [2019] NZSC 55.

to be as well-placed as a trial judge to determine contested questions of fact based on contested oral evidence. For instance, what a witness means may be conveyed, at least in part, by gesture or intonation, something which will not be apparent on the written record. More generally, the appellate process in which appellate judges are taken, sometimes rather selectively, to the aspects of the evidence on which counsel rely does not replicate the advantages of a trial judge which we have just described.

(Footnotes omitted).

[10] The trial of this proceeding took two weeks. The Judge made adverse findings about the credibility of the evidence given by Mr He. Her Honour heard conflicting oral evidence from Mr He and from the tenant of the house, Mr Loh, about the state of the house before the earthquakes and about the consequences of the earthquakes. Her Honour found that where the evidence of Mr Loh and Mr He conflicted, she was satisfied “by some margin” that Mr Loh’s evidence was to be preferred over Mr He’s.¹⁰ Her Honour had the advantages identified in *Sena*, including the advantage of hearing from the witnesses over an extended period, and viewing the property. In determining this appeal, we are conscious of those advantages.

Did the February 2011 earthquake cause damage to the floors of the house?

[11] Mr He argued at trial that the February 2011 earthquake caused the following damage, in addition to damage caused by the September 2010 earthquake:

- (a) cracking of internal linings;
- (b) cracking of the exterior cladding;
- (c) differential settlement of the foundation, giving a vertical displacement of 154 millimetres;
- (d) racking of the walls;
- (e) cracking of the perimeter foundation.

¹⁰ High Court Decision, above n 2, at [84].

[12] The central focus of Mr He's appeal was an argument that the significant dislevelment of the floors of the house, and in particular a 68 mm slope over a 4 m length of the eastern wall at the north-east corner of the house, was materially contributed to by the February 2011 earthquake.

High Court Decision on damage caused by the February 2011 earthquake

[13] At trial, there was extensive evidence about the dislevelment of the floors of the house. The floor undulated significantly, with the lowest levels on the northern side of the house. The main focus of the evidence about floor levels and foundation damage was the north-west corner of the house, which was out of level by some 156 mm.¹¹

[14] The evidence before the High Court in relation to the likely causes of the dislevelment of the house's floors included:

- (a) Evidence from Mr He and his wife Ms Ye, and from Mr Loh, about the pre-earthquake state of the house's floors. As noted above, the Judge preferred the evidence of Mr Loh that he did not notice any change in the floors as a result of the earthquakes.¹²
- (b) Photographic evidence. However, there was only limited photographic evidence of the state of the house prior to the earthquakes.
- (c) Expert evidence about the physical state of the house, including the extent of observable damage to various building components and evidence about pre-earthquake adjustments made to accommodate the floors being out of level such as moving gutters, planing windows, and moving door latches.
- (d) Expert evidence about the damage that was likely to be observed if there had been material changes in floor levels as a result of

¹¹ At [70].

¹² At [76].

the earthquakes, and about the damage that was observed post-earthquake.

- (e) Expert engineering evidence (including modelling) about soil conditions and soil bearing capacity, and about likely loads on the house's foundations during seismic events.

[15] It was common ground before us that the house had suffered significant static settlement and dislevelment before the earthquakes. As her Honour held, after reviewing the evidence about the state of the house:

[92] In my view, this evidence, considered holistically, points to the house having suffered significant dislevelment prior to the earthquakes, largely because of the inadequacy of the foundations, and that various adjustments had been made to the property over the years to respond to the developing dislevelment. By the time of the earthquakes there was significant differential settlement, particularly in the northwest corner. Furthermore, the piles and weatherboards were rotting and the exterior paint work was cracking and peeling, as recorded in the first EQC report. The assertion that the earthquakes caused further damage must be assessed against these findings as to the house's pre-existing condition.

[16] The Judge was not much assisted by the modelling carried out by the experts in relation to soil bearing capacity and seismic loads. The calculations depended on a number of assumptions that were contested. Her Honour summarised her approach to these calculations as follows:

[152] In the end, I accept that the defendants' approach has more utility in this case. That is, to look for any observable damage over and above such damage as can be shown to have occurred historically, and then to use calculations as a "sanity check" to confirm that the relative lack of observed damage was explicable.

[17] The Judge found that it had not been established that the February 2011 earthquake caused material damage to wall linings,¹³ exterior weatherboards,¹⁴ or walls and veranda posts.¹⁵ Her Honour also found that it had not been established that the earthquake had caused material damage to the concrete perimeter foundation on the south and east side of the original dwelling, apart from some cracking of plaster at

¹³ At [159]–[162].

¹⁴ At [163]–[166].

¹⁵ At [167]–[171].

the site of one pre-existing crack in the foundations. Her Honour held that there was sufficient aesthetic change at this site to warrant a repair and held that EQC was liable to repair the plaster at the site of that crack, and to repaint the length of the strip foundation on this front section of the house.¹⁶

[18] As noted above, the north-east corner of the house was the focus of the argument about floor levels on appeal to this Court. That part of the house did not receive the same emphasis at trial. It is worth setting out paragraph [171] of the High Court Decision at this point because it is concerned with that part of the house, and because Mr He was critical of aspects of the Judge's reasoning in this paragraph:

[171] The plaintiff's claim for the leaning veranda posts and the leaning eastern wall of the shop rests on the same theory that is relied on to explain the settlement in the northwest corner. I consider it must stand or fall on the same evidence. Given the evidence pointing to the other claimed earthquake dislevelment being pre-existing, the lack of visible damage in the superstructure of the house, the many indicia that the house was sloping and misaligned before the earthquakes, and the likelihood that there was adequate bearing capacity to resist the additional loads in the earthquake compared to static gravity load conditions, I consider it is less likely than not that the leaning in the walls and posts was caused by "overturning" in the February earthquake, as claimed by the plaintiff.

[19] Mr He says that there were material differences between the circumstances affecting the north-west corner, and the north-east corner. He also says that in this paragraph the Judge relied on the experts' calculations about soil bearing capacity in a manner that was not consistent with her approach to those calculations, which we set out at [16], and was therefore not open to her. We return to these arguments below.

Mr He's submissions

[20] Mr He says that the evidence establishes that the February 2011 earthquake made a material difference to the dislevelment of the house, and in particular exacerbated the slope down along the east wall to the north-east corner. He says that when the totality of the observed damage and structural expert evidence is considered, the more likely explanation of the observed damage is that it was materially

¹⁶ At [172]–[191].

contributed to by the earthquake. Mr He says that the Judge should have reached this conclusion having regard to:

- (a) the implausibility of the house not settling further as a result of earthquake shaking, having regard to the ground conditions and the inadequate foundations, in circumstances where it was common ground that there had already been static settlement;
- (b) the estimate of his expert structural engineer, Mr Gilmore, that the “earthquake component of the settlements would be in the range of 25–75 mm, based on my consideration of the site soil conditions, the damage caused to the superstructure, and comparing this with numerous similar properties I have assessed”;
- (c) the inability of the respondents’ experts to rule out the possibility of some earthquake settlement. Mr He says that the respondents’ experts conceded between 10 mm to 20 mm of earthquake settlement. He says that the respondents’ experts were unable to provide “any plausible structural explanation for how [the relevant] damage could have occurred other than by earthquake;”
- (d) Mr Gilmore’s expert evidence that the observed physical damage to the house was consistent with material earthquake settlement.

[21] Mr He says the absence of direct evidence of changes in floor levels, and of damage caused by earthquakes, is explained by the fact that he is an absentee landlord and was not on site to observe earthquake effects of this kind. He also emphasises the difficulty he faced in gathering evidence about the effects of the earthquakes as a result of limited access to the house, extensive stock and other clutter in the house, and refusal by Mr Loh to permit access to the bedroom at the north-east corner of the house (which was occupied by Mr Loh’s brother, who Mr Loh advised could not be disturbed for medical reasons).

[22] Mr He says that the Judge erred by analysing whether there was material earthquake damage to each of the separate components of the house: the wall linings, the exterior weatherboards, the eastern wall and veranda posts and the concrete perimeter foundation. Rather, the Judge should have considered whether the evidence of harm to each of these building components amounted in the aggregate to “tell-tale signs” that the floor had settled differentially in the February 2011 earthquake. Counsel for Mr He emphasised in argument that in this context it is not necessary for the observed earthquake effects to amount to damage in the sense discussed at [8] above. Harm caused by an earthquake to a building component such as the concrete perimeter foundation can be evidence of settlement of the floor even though it is not, in and of itself, so material that it amounts to damage to the house.

[23] Mr He did not challenge the Judge’s finding that the significant (156 mm) settlement in the north-west corner was pre-earthquake static settlement. But he says that the Judge erred by treating the north-east corner as raising the same issues as the north-west corner,¹⁷ in circumstances where there were factors explaining the pre-earthquake static settlement in the north-west corner that did not apply to the north-east corner. Mr He says that there was evidence of damp soil, potentially caused by a leaking down pipe, in the north-west corner but not the north-east corner. So the bearing capacity of the soil in the north-west corner was inferior to that in the north-east corner. That reduced the likelihood of significant pre-earthquake settlement in the north-east corner.

[24] Mr He says that the Judge failed to address the evidence specifically relating to the north-east corner of the house, in particular the 68 mm drop over 4 m along the eastern wall and the lean of the veranda posts along that wall towards the north of up to 39 mm. He says that Dr Johnstone, the respondents’ structural engineer, had no plausible structural explanation for how this damage could have occurred other than by earthquake.

[25] Mr He also says that the Judge misunderstood the expert evidence about soil bearing capacity, and erred in placing reliance on that evidence as a factor supporting

¹⁷ At [171].

the conclusion that there was no material earthquake settlement. In discussing the bearing capacity of the soil, the High Court Judge said:

[149] A further disputed issue was whether, and to what extent, it was appropriate to assume an increased bearing capacity of the soil during a transient event such as an earthquake. Mr Thompson accepted that the bearing capacity of the soil could be assumed to be 30 to 40 per [cent] greater, while Ms Sleight and Dr Johnstone said that the appropriate assumption was that it had 60 per cent greater bearing capacity, and no point of resolution was reached on this issue.

...

[151] Depending on the assumptions adopted, the outcome ranged from the ground being able to cope with the seismic loads by a significant margin, to it not having sufficient capacity to resist the seismic loads. For that reason, I did not find the calculations of any real assistance except to say that, in theory, it was possible for the seismic loads to exceed the bearing capacity of the soil, depending on a number of variables, including, critically, how dry the soil was at the time. However, I found Dr Johnstone's explanation the more plausible. In cross-examination, he said that the dwelling, with its hybrid foundation, had reached a position of equilibrium following static settlement. Thus, no matter whether his calculation of additional load during the earthquake, or Mr Gilmore's, was adopted, the combination of the assumed additional bearing capacity in the transient event (whether 30 per cent or 60 per cent), plus the fact that when the February earthquake occurred the ground was dry and so could be assumed to have 300 per cent greater strength, meant there was ample bearing capacity available. He therefore struggled to see why the foundations would have settled at all in the February earthquake.

[26] Mr Thompson, the expert geotechnical engineer who gave evidence for Mr He, did accept in the course of cross-examination that soil strength might increase in an earthquake by 30 to 40 per cent as a result of the rapid loading. But he did not accept that the bearing capacity of the soil increased as a result: to the contrary, he expressed the view that soil bearing capacity would reduce in an earthquake if lateral forces were taken into account. Mr He says that the Judge's conflation of the two concepts was a material error in and of itself, and that error influenced the Judge's reasoning about the likelihood of earthquake settlement, which we have set out at [18]. Mr He also submits that there was an inconsistency between the Judge's approach which we set out at [16], which involved using the modelling only as a "sanity check", and her Honour's reliance on calculations about soil bearing capacity and the ability of the soil to cope with the additional loads imposed by seismic events as a relevant factor that supported her subsequent finding of no earthquake damage.

[27] Before us counsel for Mr He accepted that the calculations carried out by the experts were consistent with a wide range of possible outcomes in the earthquakes. Those calculations were based on a number of assumptions. The Judge did not make findings about which set of assumptions should be preferred, or about which modelling evidence should be preferred. Counsel for Mr He did not suggest that we should engage with the detail of the experts' calculations, or make findings about which expert's approach to those calculations should be preferred. He accepted that we were not in a position to do so. But, he said, the evidence about modelling was equally consistent with there being earthquake damage so should not have been relied on as a basis for the Judge's finding that there was no such damage.

[28] In his written submissions Mr Cowey, counsel for Mr He, argued that the Judge gave inappropriate weight to the evidence of the tenant, Mr Loh. But at the hearing before us Mr Cowey confirmed that he was not seeking to revisit the credibility findings made by the High Court Judge. Rather, the argument before us was that Mr Loh appears to have paid only limited attention to the condition of the house, so his evidence about what had or had not changed as a result of the earthquakes should not be given great weight.

Respondents' submissions

[29] The arguments advanced by the first and second respondents on this issue were substantially the same. Both emphasised that Mr He bears the burden of satisfying this Court that the High Court was wrong to reject his claim, and that his case that there was material earthquake damage is made out.

[30] The respondents say that the available evidence supports the conclusion that the dislevelment of the house existed before the earthquakes. There was no evidence to support the view that there had been a material change to the level of the floor due to the earthquake events. They say:

- (a) There was credible evidence from Mr Loh that there was no noticeable change to the house as a result of the February earthquake. The evidence of Mr He and his wife Ms Ye to the contrary was found

to be unconvincing. The Judge's preference for Mr Loh's evidence should not be revisited on appeal.

- (b) There was none of the physical evidence that one would expect to see if there had been significant earthquake settlement: land damage, movement of subfloor components, and significant damage to the interior and exterior of the house. If the floor levels had changed abruptly and materially in an earthquake, then the rest of the structure would also have moved abruptly and materially. One would expect to see physical evidence of that movement in the form of significant damage to the interior and exterior of the house. There was no such evidence: any earthquake damage was minor, and was not consistent with the level of shaking and movement of floors contended for by Mr He.

- (c) The modelling evidence provided no support for Mr He's claim.

[31] The respondents did not accept Mr He's argument that their experts had conceded that there was earthquake settlement of 10 mm to 20 mm, or that their experts had been unable to explain how the observed settlement could have occurred other than by earthquake. They say that their experts considered there was no material earthquake settlement, though they could not rule out the possibility that some minor earthquake settlement had occurred. Their experts did not accept that material dynamic settlement had occurred as the result of an earthquake. The respondents also say that their experts did provide explanations for how the observed dislevelment and other defects in the house could have occurred, referring in their evidence to poor initial construction, inadequate foundations, heavier loading on the outside walls, poor soil quality, and poor maintenance.

[32] More generally, the respondents say that there is a logical problem with the way Mr He's case has been presented on appeal. It is not sufficient for a claimant to offer explanations for the absence of evidence about matters such as pre-earthquake floor levels, or to point to minor damage to the house that is consistent with the possibility of earthquake damage. The claimant needs to satisfy the Court that it

is likely that earthquake damage occurred. Equivocal evidence that is consistent with either pre-existing static settlement or earthquake settlement does not suffice.

Analysis

[33] The Judge assessed the totality of the evidence before her at trial, and addressed the issues as they were presented to her. We are not persuaded that her Honour erred in finding that Mr He had not established that the February 2011 earthquake caused a significant change in the house floor levels, generally or in the north-east corner. Because the case has continued to evolve before us, and there was more of a focus on the north-east corner than there appears to have been at trial, we have reviewed the evidence that relates specifically to that corner of the house. We have put to one side the modelling evidence, which (as the parties accepted) could not assist us to determine this issue.

[34] There is no direct evidence of a change in floor levels as a result of the earthquake. To the contrary, the evidence of Mr Loh was that there was no noticeable earthquake-induced change in floor levels. The Judge preferred this evidence to the evidence of Mr He and Ms Ye. She considered that he was a reserved and careful witness, and that his evidence was significantly more consistent with the available photographic and physical evidence than Mr He's, and therefore more reliable.¹⁸ We do not consider that there is any reason for us to depart from her Honour's assessment that Mr Loh's evidence was both credible and reliable.

[35] We consider that the Judge was right to focus on the evidence of Mr Loh, and on whether there was observable physical damage that could be attributed to the February 2011 earthquake. We accept the respondents' submission that if there had been material changes in floor levels caused by the earthquake, it is likely that there would be evidence of this in the form of land damage, movement of subfloor components, and/or significant damage to the interior and exterior of the house. In the present case, there was no evidence of land damage. There was no evidence of movement of subfloor components, and some evidence from photographs taken by a "cavity critter" remote-controlled camera unit that foundation structures, including

¹⁸ At [76]–[77].

loose packers, had not been disturbed by the earthquakes. There was no evidence of damage to the interior or exterior of the house of a nature or extent that could be unequivocally attributed to earthquake movement. The evidence relied on by Mr He as “tell-tale signs” of earthquake settlement was equally consistent with other explanations including poor construction, poor maintenance, natural concrete shrinkage and static settlement over an extended period.

[36] As we have already noted, it was common ground before us that there had been static settlement of the house floor pre-earthquake, including in the north-east corner. The evidence does not establish that this was materially exacerbated by the February 2011 earthquake. As counsel for Mr He accepted in the course of argument, minor additional settlement caused by the earthquake would not amount to damage in the relevant sense: the further settlement would need to be material, and to have some effect on the value or usefulness of the house. Counsel accepted in argument that an additional 10 mm of settlement in the north-east corner of this house, taking the aggregate difference in levels along that wall from 58 mm to 68 mm, was unlikely to be sufficient to have an effect on the value or usefulness of the house, so was unlikely to amount to damage in the relevant sense. We agree. There was no evidence of any increase in settlement in the north-east corner to an extent that would be material, and which would amount to damage for the purposes of the EQC Act and the relevant insurance policies.

[37] It does not appear to us that the case was presented to the Judge on the basis that the evidence of harm to each of the relevant building components amounted in the aggregate to “tell-tale signs” that the floor had settled differentially. Rather, the harm to each building component appears to have been characterised by Mr He as earthquake damage in and of itself. But approaching the issue in the way it was put before us by Mr He, and assessing the evidence in the aggregate, we are not persuaded that the Judge’s conclusion on damage caused by the February 2011 earthquake was wrong. Put another way, we are not satisfied by the evidence relied on by Mr He, assessed as a whole, that the February 2011 earthquake caused damage to the house by materially exacerbating the pre-existing dislevelment of the floor.

[38] We accept Mr He's submission that at [171] of the High Court Decision there appears to be some confusion between the concepts of soil strength and soil bearing capacity. These are distinct concepts. Mr He is right to say that although Mr Thompson accepted that soil strength increases in a seismic event, he did not accept that soil bearing capacity increases in a seismic event. Rather, he expressed the view that soil bearing capacity is reduced in such an event. The respondents' experts disagreed: they considered that the soil bearing capacity did increase in the relevant earthquake events. The difference in views between Mr Thompson and the respondents' experts on this point was not resolved at trial, and as noted above we have not been asked to resolve it. So the expert evidence on this issue was equivocal, and did not provide any additional support for a finding about the likely cause of the floor settlement. However, we do not consider that this point materially affected the Judge's reasoning. We are confident that she would have reached the same conclusion even if she had disregarded the expert evidence about soil bearing capacity.

[39] Mr He is also right to say that there were factors explaining the significant settlement in the north-west corner of the house that were not present, or at least not present to the same extent, in the north-east corner. But we agree with the Judge's view that the arguments advanced in relation to earthquake settlement in those two corners were substantially the same, and that the claim that there had been material earthquake settlement was not made out in relation to the north-east corner for substantially the same reasons that it was not made out in relation to the north-west corner.

[40] Mr He's characterisation of the concessions made by the respondents' experts in the course of cross-examination was not accurate. Ms Sleight, the geotechnical engineer called by EQC, did not accept that there had been 10 mm of settlement as a result of the earthquakes. Rather, she agreed in cross-examination that the most movement that she would expect to see in an earthquake would be 10 mm. She did not accept that it was possible that it could have been more than this, having regard to the loads calculated by Dr Johnstone. Dr Johnstone, the structural engineer called by EQC, accepted that he could not say there had been no settlement whatsoever. He said there could have been "a millimetre or two here and there, quite possibly". He was

also willing to accept that there could have been settlement of 20 mm over the length of the building. It is worth setting out the relevant passage from his cross-examination in full:

Q. Do you accept that some settlement could have been caused by the earthquakes?

A. I have to accept that some could be but how much I have no idea. There's no way I can say there's been no settlement whatsoever. A millimetre or two here and there, quite possibly.

Q. Would you say 10mm here or there?

A. I'm not going to bargain, what's the point. I don't think anything like ...

Q. 20mm here or there?

A. Well depends where it is, as I said. Over the length of the building, perhaps it was.

Q. Yeah over the length of the building?

A. Yeah.

Q. Twenty? Because Mr Gilmore's evidence was that over the length of the building and he can't – nobody can be too precise about it because we don't have an actual hard data feed of every point in that building in the earthquakes but his assessment was that the earthquakes will have caused somewhere between 25 and 75mm of settlement.

A. Well that I absolutely dispute because if that had occurred, you would've seen manifestations of it all through the place. You would have ripped junctions of walls and ceilings and floors. You would have a lot of damage to get that much because you can't have movement without damage and you can't have stress without movement. It's just an engineering [axiom].

[41] This falls far short of an acceptance that there was 20 mm of settlement in the north-east corner of the house. Rather, it is an acceptance that up to 20 mm of settlement could have been caused by earthquake along the length of the building – which in context appears to be a reference to settlement along the length of the building from east to west, down to the lowest level in the north-west corner. Dr Johnstone made it very clear that he did not accept Mr Gilmore's view that the earthquakes caused between 25 mm and 75 mm of settlement.

[42] We do not consider that the concessions made by the respondents' experts provide any support for the argument that material earthquake damage was caused by the February 2011 earthquake.

[43] Nor do we see any force in Mr He's argument that the respondents' experts had no plausible structural engineering explanation for how the 68 mm settlement occurred in the north-east corner, other than as a result of the earthquakes. We agree with the Judge's observation that this mischaracterises the answers given by Dr Johnstone.¹⁹ It was common ground that there had been pre-existing differential settlement in the floors, including in the north-east corner. The respondents' experts identified possible contributing factors to the pre-existing static settlement including poor construction, inadequate foundations and poor soil quality. They also gave evidence that the observed settlement was inconsistent with earthquake settlement because there were none of the other signs of damage to the superstructure that would be expected to accompany earthquake settlement. It was not necessary for them to be able to pinpoint exactly how and when the pre-existing differential settlement had come about. The burden was on Mr He to show that there had been material incremental settlement caused by the earthquakes. He failed to do so.

[44] We therefore dismiss the ground of appeal in relation to damage caused by the February 2011 earthquake.

EQC obligations in relation to chimney damage

The claim in relation to the chimney

[45] The house had two chimneys. Both chimneys suffered visible damage above the roofline in the September 2010 earthquake. No damage was apparent in photographs of the parts of the chimney stacks visible in the roof cavity. The balance of each chimney stack is encased by wooden framing and wall linings, none of which showed any signs of damage.

¹⁹ At [168].

[46] The High Court held that EQC's obligations in relation to one of the chimneys had been satisfied by meeting the cost of removing that chimney stack down to below the roofline, and providing a heat pump in lieu of repair of that chimney. That finding is not challenged on appeal. The issue before us is whether EQC has met its obligations in relation to the other chimney by meeting the cost of removing the chimney stack down to below the roofline, and making a cash payment of \$5,089 for the cost of rebuilding that chimney. Mr He says that EQC should also meet the cost of an engineer's inspection of the remaining part of that chimney, and if necessary, deconstruction, design and replacement of that chimney.

High Court Decision

[47] The Judge summarised the evidence in relation to the relevant chimney stack as follows:²⁰

Mr Gilmore gave evidence for the plaintiff that, in his experience, it is common to find that cracks occur internally in these types of brick chimney and he would always recommend replacing the chimney in its entirety. However, Mr Sylvia and Mr Searle, who both gave evidence for EQC, say there is no evidence to indicate there is any earthquake damage to the chimney stack below the roofline and photographs of the parts of the chimney stacks which are visible in the roof cavity show no evidence of earthquake damage. Furthermore, EQC has frequently effected repairs to such chimneys by obtaining the necessary consents to rebuild them above the roofline. For these reasons, they do not consider it necessary to remove the balance of the chimney stack. Dr Johnstone also confirmed that there was no sign of any earthquake damage in the photos taken of the remaining chimney stacks.

[48] Her Honour concluded that EQC had met its obligations in relation to that chimney:

[102] While I accept that engineers may commonly recommend the complete removal of unreinforced chimney stacks, there is no evidence that this is generally necessary or, more importantly, that it is required in this particular case. I therefore conclude that the plaintiff has not demonstrated that the internal part of the chimney stacks are damaged, nor that their complete removal and rebuilding is required to be paid for by EQC.

²⁰ At [101].

Mr He's submissions

[49] Mr He says that the Judge's finding that he had not demonstrated that the internal part of the chimney stacks is damaged was not open on the evidence.

[50] Mr He says that Mr Gilmore gave evidence that it would be necessary for an engineer to look at the chimney stub before building a structure on top of it. Dr Johnstone agreed in cross-examination that this would be necessary. Dr Johnstone also agreed that it is common for engineers to say it is not worth doing the inspections required before rebuilding the chimney, and it should simply be pulled down. He agreed that this was an appropriate engineering response.

[51] Mr He says that the sum he has been paid by EQC is not sufficient to meet the cost of the engineering inspection of the chimney stub that the evidence establishes is necessary before building on top of it (if that is feasible). Nor is it sufficient to meet the cost of deconstructing the chimney and designing and building a replacement, if the stub cannot be built upon.

EQC's submissions

[52] EQC says that it assessed the cost of rebuilding the chimney as \$5,089 including "P & G" (preliminary and general costs), margin and GST. This was paid to Mr He.

[53] EQC says there is no evidence of any damage to the internal part of the chimney stack that would require its complete removal and rebuilding.

Analysis

[54] The Judge was right to find that there was no evidence of any damage to the internal part of the chimney stack. Mr He failed to establish that it was necessary for the chimney stack to be completely removed and replaced from the ground up.

[55] The more difficult question is whether the payment for the cost of rebuilding the chimney above the roofline should have included the cost of an engineering inspection to confirm that this was feasible. The evidence of Mr Gilmore on this issue

was equivocal. In response to a question from her Honour, he said that rebuilding the chimney from the ground up would require an engineer's certification. When asked if that would apply to rebuilding from just below the roof, he said "I believe so, yes, yes, because we don't, just depends on what the form of that construction actually is." The evidence of Mr Sylvia for EQC was that no building consent would be required for a partial replacement of that kind. When it was put to Dr Johnstone in cross-examination that Mr Gilmore had said that an engineering inspection would be needed before building a structure on top of the chimney stub, the qualification that this would depend on the form of construction was omitted. It is difficult to know what form of construction Dr Johnstone had in mind when he gave his affirmative answer. Taking all of this evidence into account, it is unclear whether the chimney could be rebuilt from just below the roof without first obtaining an engineer's certificate. Having regard to the burden on Mr He to make out his claim,²¹ we are not satisfied that the Judge was wrong to reject this aspect of Mr He's claim. This ground of appeal must therefore fail.

Conclusion

[56] Mr He has not established that the February 2011 earthquake materially contributed to the dislevelment of the floors of the house, in particular at the north-east corner. Nor has he established that EQC should meet the cost of an engineer's inspection of the remaining part of the second chimney, and of any additional costs incurred in replacing the chimney as a result of such an inspection. The appeal must therefore be dismissed.

Costs

[57] Costs should follow the event in the normal way. The parties agreed that costs should be awarded on the basis of a standard appeal, with a certificate for second counsel.

[58] EQC and OMPL had different interests in respect of the claim and the appeal. It was reasonable for them to be separately represented on appeal. We therefore order

²¹ See [7] above.

Mr He to pay one set of costs to the first respondent and one set of costs to the second respondents, in each case for a standard appeal on a band A basis together with usual disbursements.

Result

[59] The appeal is dismissed.

[60] Mr He must pay one set of costs to the first respondent and one set of costs to the second respondents, in each case for a standard appeal on a band A basis together with usual disbursements. We certify for second counsel.

Solicitors:

Parry Field Lawyers, Christchurch for Appellant
Russell McVeagh, Wellington for First Respondent
Wotton + Kearney, Wellington for Second Respondents